2nd Quarterly Status Report

Project Title: EXTERNAL PIPELINE COATING INTEGRITY (one year extension)		
DOT PHMSA Advances Coatings R&D Contract # DTPH56-06-T-000022		
	Principal Investigator	Co-Investigator
Name	Prof. Hung-Jue Sue, PhD	Benjamin T. A. Chang, PhD, PE
Affiliation	Texas A/M University Department of Mechanical Eng. College Station, TX 77843	PolyLab LLC 10400 Westoffice Dr. Ste 107 Houston, TX 77042
Telephone	979 845 5024	(713) 783-7659
Fax	979 845 3081	(713) 783-9191
Email	Hjsue@tamu.edu	Benjamin.Chang@PolylabLLC.com

Summary

We have established a new test method – "Bending Strain Measurement of Free Film FBE Coatings by A Digital Caliper". This test method is simple and effective in the evaluation of the coating material stability upon either thermal aging or water immersion. The test results suggest that the 3M Scotchcoat 626-140 high T_g FBE coating seems to be stable at a temperature up to 110 °C. Longer test will be continued to confirm such a stable performance. We have also set a special high temperature cathodic disbondment test apparatus to evaluate the high temperature cathodic disbondment performance. The notched coating adhesion measurement *via* the bending test seems effective and more tests will be conducted. Tests on thermally-induced cracking of 3LPP pipeline coating sample are still under 150 °C thermal aging conditioning. Regarding the scratch testing and modeling efforts, finite elements numerical modeling work has been completed to correlate the scratch-induced adhesive stress at the interface with both the scratch tip geometry and coating thickness. The scratch samples have also been conditioned at 110°C to study how the thermal aging affects the adhesive properties of FBE coatings on a steel substrate, Careful scratch tests are currently underway to evaluate adhesive strength of FBE on steel substrates.